



DEPARTMENT OF THE ARMY
HUNTSVILLE DIVISION, CORPS OF ENGINEERS
P. O. BOX 1600
HUNTSVILLE, ALABAMA 35807-4301

REPLY TO
ATTENTION OF

CEHND-ED-CS (415-10f)

27 November 1989


MEMORANDUM FOR Chief, Corps of Engineers Project Office, U. S.
Army Production Base Modernization Activity,
ATTN: Mr. Steve Durski, Picatinny Arsenal,
Dover, NJ 07801-50001

SUBJECT: Blast Door Concepts for Corbetta-Type Magazines

1. We are transmitting the final report of subject matter (Enclosure 1) for your continued action.
2. Reproducible mylar drawings for two new door concepts and modification to the existing Corbetta door are included in Enclosure 2, and related specifications are provided in Enclosure 3.
3. Point of contact is Mr. Adib Farsoun of our Structural Section, AUTOVON 788-5410 or commercial 205-895-5410.


FOR THE COMMANDER:

3 Encls
as


H. O. EVERITT
Chief, Engineering Division

MFR FOR MR. GARY KAZIN AMSAC - PBE - E (D)

TRANSMITTED HERewith ARE THREE (3) ENCLOSURES NOTED
IN PARAS 1 & 2 ABOVE.


CEHND-ED-PM-PY 29 NOV 89

RECEIPT ACKNOWLEDGED: _____

Encl 1

**SPECIFICATION
FOR
STEEL BLAST DOOR
FOR
CORBETTA MAGAZINE**

GENERAL NOTES

1. The designations for publications listed in the Applicable Publication paragraphs are those that were in effect when this standard specification was being prepared.

2. This specification is intended to be used in specifying steel blast doors for Corbetta Magazines as shown on drawing [].

3. The following Corps of Engineers Guide Specification were used in preparation of this standard specification:

<u>Section No.</u>	<u>Title</u>	<u>Guide Specification No./ Date/Latest Notice</u>
5A	Doors & Miscellaneous Metals	CEGS-05500/Oct 67/N5
9A	Painting, General	CEGS-09910/Jan78/N7

TECHNICAL NOTES

1. GENERAL NOTES, Paragraph 2: Provide the drawing number for the door used.

2. Section 9A, Paragraph 8.2: Appropriate materials will be selected. SSPC-Paint 1 is a very slow-drying, lead-containing primer for poorly cleaned steel. SSPC-Paint 2 is a slow-drying, lead-containing primer for steel which has been hand-tool cleaned. SSPC-Paint 5 is a two-component, zinc-dust primer designed for use on commercial blast-cleaned steel or clean, galvanized surfaces. SSPC-Paint 11 is a zinc-chromate primer with properties similar to SSPC-Paint 2. SSPC-Paint 25 contains no toxic pigments; its application properties are similar to those of SSPC-Paints 2 and 11; however, corrosion protection is reduced.

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SECTION 5A

DOORS AND MISCELLANEOUS METAL

1. APPLICABLE PUBLICATIONS: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1.1 American Society for Testing and Materials (ASTM) Publications:

A 36-84a	Structural Steel
A 500-84	Cold-formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

1.2 American Welding Society (AWS) Standard:

D1.1-85	Structural Welding Code - Steel
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1.3 American Institute of Steel Construction (AISC) Publication:

Specification for the Design, Fabrication and Erection of Structural Steel for Building (Nov. 1, 1978, with Commentary)

2. GENERAL REQUIREMENTS: The Contractor shall verify that all drawing dimensions are compatible with the existing magazine structure. Where a conflict exists that will affect the proper fit or function of the door, the drawing dimensions should be revised as necessary to make the door compatible with the existing field conditions. Any changes to the drawings must be approved by the Contracting Officer. Joints exposed to the weather shall be formed and welded to exclude water. Welding shall be in accordance with AWS D1.1.

3. SUBMITTALS: Shop drawings shall be submitted for the door and door accessories and shall indicate material thickness, type, grade and class; dimensions; and construction details. Drawings shall include catalog cuts, erection details, manufacturer's descriptive data and installation instructions, and templates.

4. WORKMANSHIP: Miscellaneous metalwork shall be well formed to shape and size, with sharp lines and angles and true curves. Drilling and punching shall produce clean true lines and surfaces. Welding shall be continuous along the entire area of contact, except where tack welding is permitted. Exposed connections of work in place shall not be tack welded. Exposed surfaces of work in place shall have a smooth finish. Where tight fits are required, joints shall be milled. Corner joints shall be coped or mitered, well formed and in true alignment. Work shall be accurately set to established lines and elevations and securely fastened in place. Installation shall be in accordance with manufacturer's installation instructions and approved drawings, cuts and details.

5. MISCELLANEOUS PLATES AND SHAPES for items that do not form a part of the structural steel framework, such as miscellaneous mountings and frames, shall be provided to complete the work.

6. DOORS shall be constructed of structural steel conforming to ASTM A 36, assembled, welded and equipped with all required hardware and accessories to complete the installation in the fabricator's shop. The internal tube stiffeners used in the door shall be steel conforming to ASTM A 500, Grade A. Materials and fabrication of doors shall be in accordance with the applicable requirements of this section, the AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings and the AWS D1.1. Special care shall be exercised during welding to prevent warping. The surfaces shall be flat, parallel and plumb after erection. The Contractor shall be responsible for proper installation of the door assembly so that operating clearances and bearing surfaces of the erected door conform to the drawing requirements. The interior of the door, including all tubular structural members, except as noted, shall be filled with foamed-in-place polyurethane foam after all pre-installation welding is completed.

7. SHOP PAINTING: Unless otherwise specified, surfaces of ferrous metal shall be cleaned and shop coated with the manufacturer's standard protective coating. Surface shall be cleaned with solvents to remove grease and oil and with power wire-brushing or sandblasting to remove loose rust, loose mill scale and other foreign substances. Surfaces of items embedded in concrete shall not be painted.

SECTION 9A

PAINTING, GENERAL

PART 1 - GENERAL

1. APPLICABLE PUBLICATIONS: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1.1 Federal Specifications (Fed. Spec.):

TT-E-489G	Enamel, Alkyd, Gloss (for Exterior and Interior Surfaces)
TT-P-31D	Paint, Oil: Iron-Oxide, Ready-Mixed, Red and Brown
TT-P-37D & Am-4	Paint, Alkyd Resin, Exterior Trim, Deep Colors
TT-P-38D & Am-I	Paint, Aluminum, Ready-Mixed
TT-P-102E & Int Am-I	Paint, Oil, Alkyd Modified, Exterior, White and Tints

1.2 Federal Standard (Fed. Std.):

No. 595a & Change Notices 2, 3, 4, 5, 7 & Errata, 8	Colors
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1.3 Steel Structures Painting Council (SSPC) Specifications:

SSPC-SP 3-82	Power Tool Cleaning
SSPC-SP 6-82	Commercial Blast Cleaning
SSPC-SP 7-82	Brush-Off Blast Cleaning
SSPC-Paint 1-82	Red Lead and Raw Linseed Oil Primer
SSPC-Paint 2-82	Red Lead, Iron Oxide, Raw Linseed Oil and Alkyd Primer
SSPC-Paint 5-82 Varnish Paint	Zinc Dust, Zinc Oxide and Phenolic

SSPC-Paint 9-82	White (or Colored) Vinyl Paint
SSPC-Paint 11-82	Red Iron Oxide, Zinc Chromate, Raw Linseed Oil and Alkyd Paint
SSPC-Paint 21-82	White or Colored Silicone Alkyd Paint
SSPC-Paint 25-82	Red Iron Oxide, Zinc Oxide, Raw Linseed Oil and Alkyd Primer (Without Lead and Chromate Pigments)
SSPC-Paint 27-82	Basic Zinc Chromate - Vinyl Butyral Wash Primer

2. DEFINITION: The term "paint," as used herein, includes enamels, paints, and other coatings, whether used as prime, intermediate, or finish coat.

3. PACKAGING, LABELING, AND STORAGE: Paints shall be in sealed containers that legibly show the designated name, formula or specification number, batch number, color, quantity, date of manufacture, manufacturer's formulation number, manufacturer's directions including any warnings and special precautions, and name of manufacturer. Pigmented paints shall be furnished in containers not larger than 5 gallons. Paints shall be stored on the project site or segregated at the source of supply sufficiently in advance of need to allow 30 days for testing. Emulsion paints shall be stored to prevent freezing.

4. SUBMITTALS:

4.1 Samples: Upon notification by the Contractor that the material is at the site or source of supply, a 1-quart sample of each batch, except for small quantities approved as proprietary brands, shall be taken by random selection from the sealed containers by the Contractor in the presence of a representative of the Contracting Officer. The contents of the sampled containers shall be thoroughly mixed to ensure that the sample is representative. Samples shall be identified by designated name, specification number, batch number, project contract number, intended use, and quantity involved.

4.2 Small Quantity Substitution: The Contractor shall submit for approval the names, quantity represented, and intended use for the proprietary brands of materials proposed to be substituted for the specified materials when the required quantity of a particular color is 50 gallons or less.

4.3 Test Reports: In addition to stating the quantity represented and the intended use, the Contractor shall furnish the following for batches in excess of 50 gallons:

a. A test report showing that the batch meets all specification requirements, or;

b. A test report showing that a previous batch of the same formulation as the batch to be used met all specification requirements, plus, on the proposed batch to be used, a report of test results for properties of weight per gallon, viscosity, fineness of grind, drying time, color, and gloss.

5. COLORS AND TINTS shall conform to Fed. Std. 595 and shall be as selected by the Contracting Officer. The color of the undercoats shall vary slightly from the color of the next coat.

6. QUALITY ASSURANCE PROVISIONS: When samples are tested, approval of materials will be based on tests of the samples; otherwise, materials will be approved based on test reports furnished with them. If materials are approved based on test reports furnished, samples will be retained by the Government for testing should the materials appear defective during or after application. In addition to any other remedies under the contract the cost of retesting defective materials will be at the Contractor's expense.

7. ENVIRONMENTAL CONDITIONS: Paints shall be applied only to surfaces that are completely free of moisture as determined by sight or touch. In no case shall paint be applied to surfaces which have visible frost or ice.

PART 2 - PRODUCTS

8. MATERIALS shall conform to the requirements listed herein and in the PAINTING SCHEDULE, except when the required amount of a material of a particular color is 50 gallons or less. In this case, an approved first-line proprietary brand of materials with similar intended usage and color to that specified may be used.

8.1 Exterior Oil Paint: Exterior oil paint shall conform to the following:

a. White: Fed. Spec. TT-P-102, [Type I] [Type II].

b. Light tints: Fed. Spec. TT-P-102, Type II.

c. Red or brown: Fed. Spec. TT-P-31.

d. Other deep colors: Fed. Spec. TT-P-37.

8.2 Ferrous-Metal Primer: Ferrous-metal primer shall conform to [SSPC-Paint 1] [SSPC-Paint 2] [SSPC-Paint 5] [SSPC-Paint 11] [SSPC-Paint 25].

9. HAZAROUS MATERIALS RESTRICTIONS: Paints and painting practices shall comply with all applicable state and local laws enacted to insure compliance with Federal Clean Air Standards. Mercurial fungicides shall not be used in exterior oil paints.

PART 3 - EXECUTION

10. SURFACE PREPARATION:

10.1 General Requirements: Items not to be painted which are in contact with or adjacent to painted surfaces shall be removed or protected prior to surface preparation and painting operations. Surfaces to be painted shall be clean before applying paint or surface treatments. Oil and grease shall be removed with clean cloths and cleaning solvents prior to mechanical cleaning. Cleaning solvents shall be of low toxicity with a flashpoint in excess of 100 degrees F. Cleaning shall be programmed so that dust and other contaminants will not fall on wet, newly painted surfaces. Items removed prior to painting shall be replaced when painting is completed.

10.2 Ferrous Surfaces: Ferrous surfaces that have not been shop-coated shall be solvent-cleaned. Surfaces that contain loose rust, loose mill scale, and other foreign substances shall be cleaned mechanically with power tools according to SSPC-SP 3 or by sandblasting according to SSPC-SP 7. After cleaning, one coat of ferrous-metal primer shall be applied to all ferrous surfaces to receive paint. Shop-coated ferrous surfaces shall be protected from corrosion by treating and touching up corroded areas immediately upon detection.

11. MIXING AND THINNING: Packaged paint may be thinned immediately prior to application with not more than 1 pint of suitable thinner per gallon when necessary to suit conditions of surface, temperature, weather, and application methods. The use of thinner shall not relieve the Contractor from obtaining complete hiding. Paints of different manufacturers shall not be mixed.

12. APPLICATION:

12.1 General Requirements: Paint may be applied by brush, roller, or spray. At the time of application, paint shall show no signs of deterioration. Uniform suspension of pigments shall be maintained during application. Each coat of paint shall be applied so finished surfaces shall be of uniform thickness and free from runs, drops, ridges, waves, laps, brush marks, and variations in color, texture, and finish. Hiding shall be complete. Rollers for applying paints and enamels shall be of a type designed for the coating to be applied and the surface to be coated. Special attention shall be given to insure that all edges, corners, crevices, welds, and rivets receive a film thickness equal to that of adjacent painted surfaces.

12.1.1 Adequate ventilation shall be provided during paint application. Respirators shall be worn by all persons engaged in spray painting. Adjacent areas shall be protected by approved precautionary measures.

12.1.2 Paints shall be applied only to surfaces that are completely free of moisture as determined by sight or touch.

12.2 Time Between Surface Preparation and Painting: Surfaces that have been cleaned, pretreated, and otherwise prepared for painting shall be given a coat of the specified first coat as soon as practical after such pretreatment has been completed, but prior to any deterioration of the prepared surface.

12.3 Coating Progress: Sufficient time shall elapse between successive coats to permit proper drying. This period shall be modified as necessary to suit weather conditions. Oil-based paints shall be considered dry for recoating when the paint feels firm, does not deform or feel sticky under moderate pressure of the thumb, and the application of another coat of paint does not cause the undercoat to lift or lose adhesion.

13. SURFACES TO BE PAINTED: Surfaces listed in the PAINTING SCHEDULE will receive the surface preparation, paints, and number of coats prescribed in the schedule.

14. CLEANING: Cloths, cotton waste and other debris that might constitute a fire hazard shall be placed in closed metal containers and removed at the end of each day. Upon completion of the work, staging, scaffolding, and containers shall be removed from the site or destroyed in an approved manner. Paint and other deposits on adjacent surfaces shall be removed and the entire job left clean and acceptable.

15. PAINTING SCHEDULE: The PAINTING SCHEDULE prescribes the surfaces to be painted, required surface preparation, and the number and types of coats of paint. Explanatory information for use with the PAINTING SCHEDULE is as follows:

15.1 Contractor's Options: The PAINTING SCHEDULE provides for Contractor's options as specified by the word "or" between each system.

15.2 Shop-Painted Items: Surfaces of items finish-painted by the manufacturer, or specified to be finish-painted under other sections of the specifications, are exempted from the requirements for surface preparation and painting. Shop-primed items shall receive surface preparation and finish painting as required by this section.

15.3 Surface Preparation: The phrase "as previously specified," as used to define surface preparation in the PAINTING SCHEDULE, refers to the paragraph, SURFACE PREPARATION, of this section of the specifications.

PAINTING SCHEDULE

<u>Surface</u>	<u>Surface Preparation</u>	<u>Primer</u>	<u>Finish</u>
Ferrous surfaces, exposed, unless otherwise specified.	As previously specified.	Exterior oil paint.	Exterior oil paint.
		TT-P-38.	TT-P-38.
		TT-E-489, Class A.	TT-E-489, Class A.
		SSPC-Paint 21 Type I.	SSPC-Paint 21 Type I.
Ferrous surfaces subject to severe atmospheric exposure.	Commercial blast-cleaning, SSPC-SP 6. Pretreat with SSPC-Paint 27.	SSPC-Paint 9, 4 coats or as required to obtain specified thickness.	